

EndoTherm[®]

INSTALLATION INSTRUCTIONS FOR DOMESTIC HEATING SYSTEMS



This document contains generic installation guides for the addition of EndoTherm into a wet heating circuit. For each installation the engineer undertaking the task is responsible for ensuring their adequacy and applicability with the system and premises presented for dosing.

These instructions are not intended for non-professional users. Endo Enterprises accepts no liability for any issues arising during the addition of the product.



PRE-INSTALLATION REQUIREMENTS

- The boiler system should be online with confirmed circulation, and if possible, flow around the whole system.
- The user must have suitable tools and equipment as described in the guide prior to starting the installation, with the correct competencies to undertake the task.
- Complete RAMS should be prepared taking in to account the method to be utilised, system arrangements and property.

SYSTEM BLEEDING/AIR REMOVAL

The physical properties of EndoTherm mean that the surface tension of the system fluid will be reduced and as a consequence, if any significant quantities of air or gas is present within the system, then there is the possibility of foam generation in the air space. This effect also means that any unnoticed weeping leaks could also become more visually apparent as the leak may now present as foam as the water exits from the leak point in to the atmosphere.

It is important that prior to the installation of EndoTherm the heating system is proven as free from air by manually bleeding or similar, and visually inspected for leaks. Particular attention should be made to the correct operation of any installed automatic air vents. **EndoTherm should not be installed until any identified issues are rectified and the system is proven as air or gas free.**

MINIMUM SUGGESTED PPE REQUIREMENTS

- Safety eye wear.
- Thermal protection gloves.
- No short sleeves or shorts.

Site rules and issued RAMS may also identify further required PPE such as safety boots/helmets etc. Installation engineers should also have the following equipment if not available at the installation location:

- Spill kit
- First aid kit
- Eye wash bottle

OPEN VENTED SYSTEM REQUIREMENTS

Care should be taken to ensure there is sufficient expansion volume between the normal cold-water operating level within the tank and the tank overflow. For un-dosed water an expansion of 3% should be available (3L of tank level expansion volume per 100L of system water volume). For an EndoTherm dosed system 3.5% expansion should be available (3.5L per 100L system water volume). This can be achieved by lowering the ball-cock fill level within the tank if required.

AIR VENTED SYSTEM REQUIREMENTS

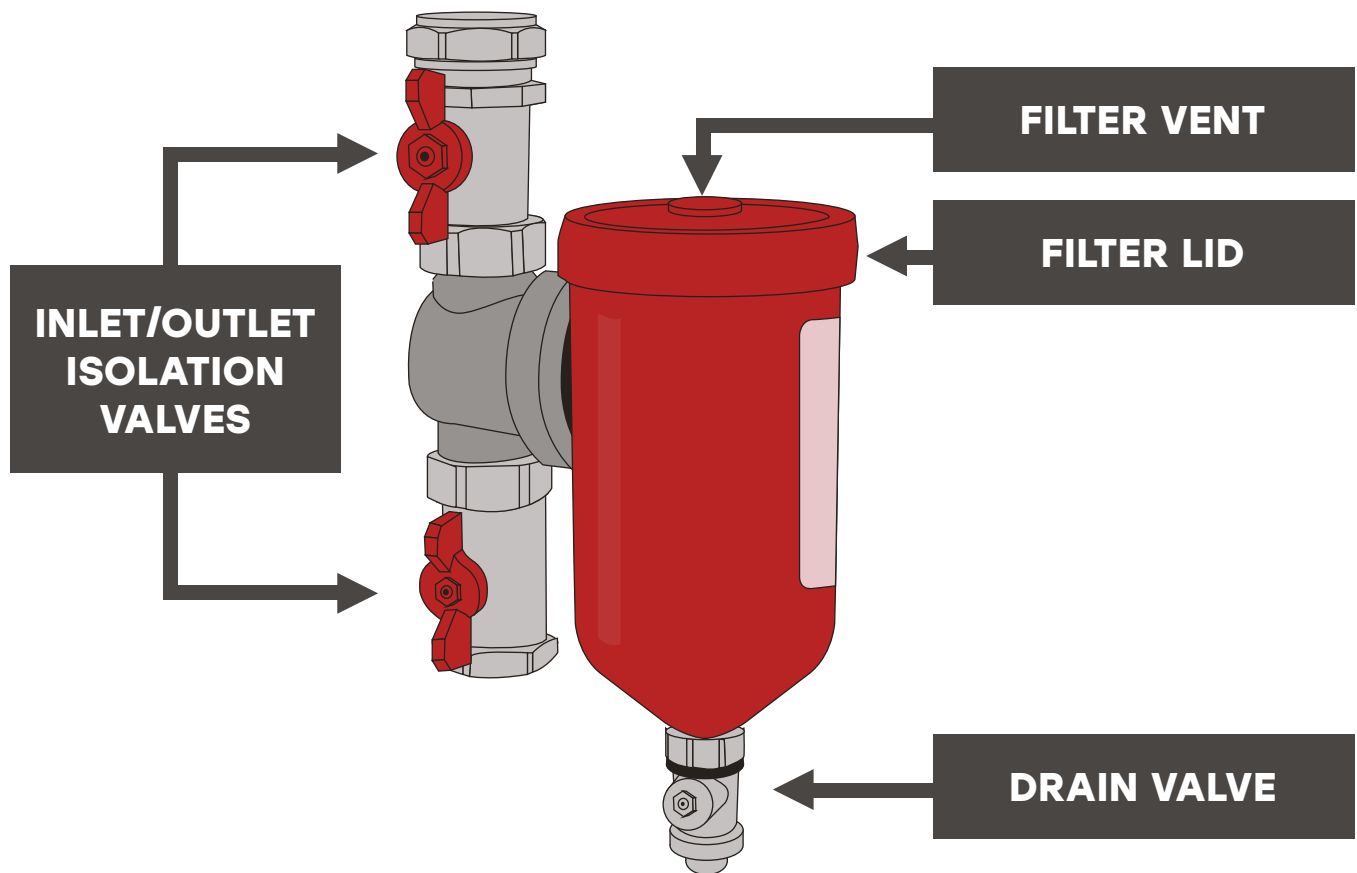
For systems containing auto-air vents, including Spirex vents, during the initial circulation phase during and after installation there may be some foam emitted alongside the air from these vents. This is only temporary and should be wiped off with paper towels or rags.

This issue is most apparent on small scale (domestic type) systems, particularly when the product is introduced into the system in one amount, such as injection method 5 – Filter, and the injection point is immediately upstream of the system circulation pump. If deemed necessary, auto air vents can be isolated or bypassed for a suggested period of 30 minutes post injection. Care must be taken to ensure these are brought back online if isolated/bypassed temporarily.

SAMPLING

For larger/complex systems there may be a requirement to obtain samples for analysis of dose level by Endo Enterprises staff. Pre and post samples should be obtained, minimum volume required is 100ml. For post installation samples the system should be in full circulation for at least 30 minutes (more for very large systems) before the sample is obtained to ensure it is representative.

Typical Magnetic Trap arrangement:

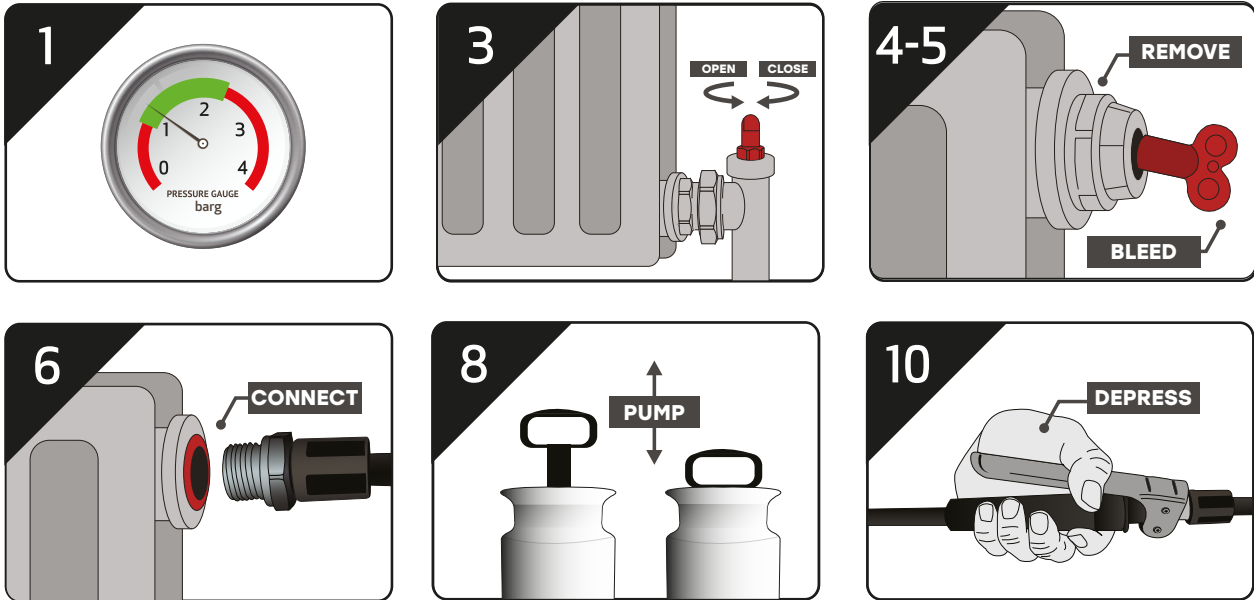


1. Confirm boiler is switched off and system cooled. It is important that no heating is on and no hot water is drawn during this process.
2. Close filter inlet and outlet valves.
3. Carefully open the filter vent and release the pressure from the filter.
4. Place a suitable container under the filter and open the drain valve.
5. Once the filter is empty, close the drain valve.
6. Unscrew and remove the filter lid.
7. Pour the EndoTherm in to the empty filter. Note: If more EndoTherm is to be dosed than the filter can hold then it will have to be done in repeat stages.
8. Refit and tighten the filter lid as per manufacturer's instructions.
9. Confirm the filter vent is closed and open the filter inlet and outlet valves.
10. Carefully open the filter vent to bleed any air from the filter. Close valve when complete.
11. Switch the boiler back on.
12. If required re-pressurise the heating system to the manufacturers recommended pressure (usually 1.5 bar, please consult manual if unsure) via the filling loop.
13. Leave the boiler operating and EndoTherm will circulate within an hour.
14. If more EndoTherm is required, repeat process from step 1.

For other filter types the above process should be followed once the availability/location of suitable inlet, outlet, drain & vent valves have been identified for the filter.

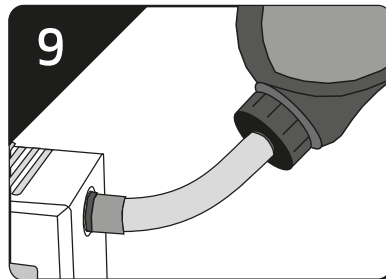
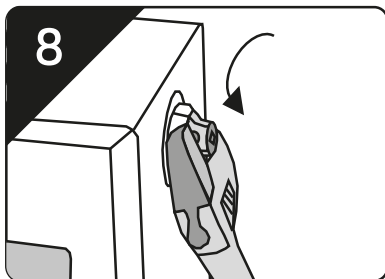
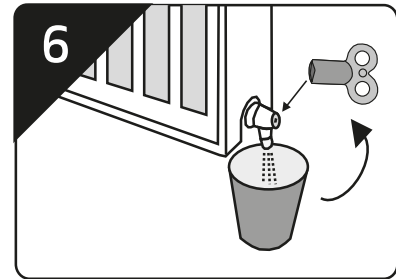
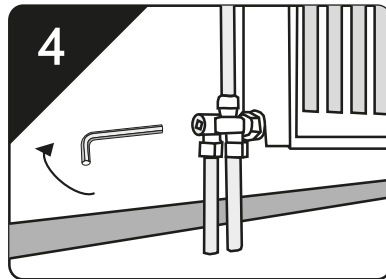
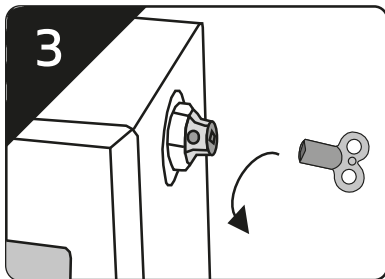
INSTALLATION METHOD 2 - INJECTION VIA RADIATOR WITH PRESSURISED PUMP

This method requires the use of a suitable pump (manual or electrical) with hose fittings able to connect to the radiator. The most common fitting is ½” male BSP but others may be required. The method shown utilises a pressurised hand pump with a maximum pump pressure of 3 Barg.



1. Check system pressure at boiler gauge. If system is at low pressure (<1 Barg) then product may be added, if system is at high pressure (>1 Barg) then a suitable volume must be removed via a drain point prior to adding product. It may be necessary to isolate any auto-pressurisation units if present on the system.
2. Identify a suitable radiator for connection. For multi-floor buildings it is preferable to use a radiator on a higher floor as the system head pressure will be lower.
3. Close both radiator inlet and outlet valves.
4. Using a radiator bleed key open the radiator vent and release its internal pressure.
5. Remove the top plug from the radiator, taking care to collect any water that is emitted.
6. Connect the pump hose in to the radiator top plug.
7. Pour required amount of product in to hand pump vessel (if more product is required than pump capacity then repeated fill cycles will have to be undertaken).
8. Pressurise pump cylinder using hand pump.
9. Open both radiator inlet and outlet valves.
10. Depress pump hose outlet valve and begin transfer of product in to system.
11. Monitor system pressure during transfer, if pressure increases to high levels cease transfer and drain water from system at suitable point.
12. Continue transfer until pump vessel is empty.
13. If more product is required, de-pressurise pump and refill with product. Repeat sequence from step 4.
14. Once all product has been transferred in to system, close both radiator inlet and outlet valves.
15. De-pressurise pump via vessel bleed valve with pump hose outlet valve open to also de-pressurise the isolated radiator.
16. Once radiator and pump are de-pressurised, disconnect pump hose from radiator, taking care to collect any fluid emitted.
17. Insert radiator top plug and tighten to make seal. Confirm radiator bleed valve is closed.
18. Open both radiator inlet and outlet valves.
19. De-isolate any automatic pressurisation units, confirm boiler system is within manufacturers recommended pressure range.

EndoTherm can be directly installed into a radiator without a pressurised pump using the installation kit adapter also provided.



1. Switch off your boiler. It is important that no heating is on and no hot water is drawn during this process.
2. If no dedicated dosing point available, find a suitable radiator with a drain valve.
3. Slowly vent/bleed the radiator via the bleed pin to relieve system pressure.
4. Isolate the radiator by closing the radiator inlet and outlet valves.
5. Once the radiator is isolated prepare a container under the valve joint and release the valve joint with a suitable spanner.
6. Remove an amount of system water equal to the volume of EndoTherm to be installed. If required, take a pre-install sample of water and place in a sealed, labelled container.
7. Tighten the valve joint when the required volume of system water is drained into the container.
8. Remove the plug from the top of the radiator and attach the provided EndoTherm installation kit.
9. Screw the open EndoTherm container to the installation kit and pour in the contents (some squeezing may be required) a funnel may also be used.
10. Once the EndoTherm container is emptied reinstall and tighten the radiator plug.
11. Re-open the radiator inlet and outlet valves that you closed in step 4.
12. Switch the boiler back on and gently bleed air from all radiators.
13. If required re-pressurise the heating system to the manufacturers recommended pressure (usually 1 bar, please consult manual if unsure).
14. Switch back on your boiler and EndoTherm will circulate within an hour.
15. If required take a post-install water sample to ensure EndoTherm has been installed at the correct concentration.

The installation of EndoTherm into a towel radiator follows the same steps as a normal radiator. Towel radiators have the plugs at the top of the unit which allows an easier angle to enter the radiator.

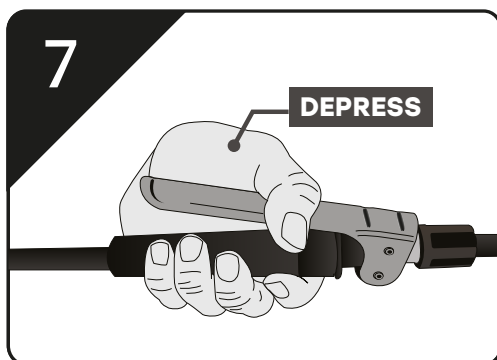
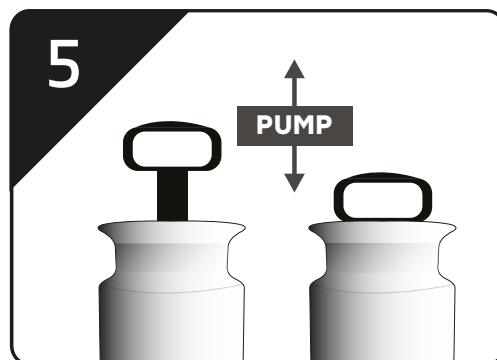
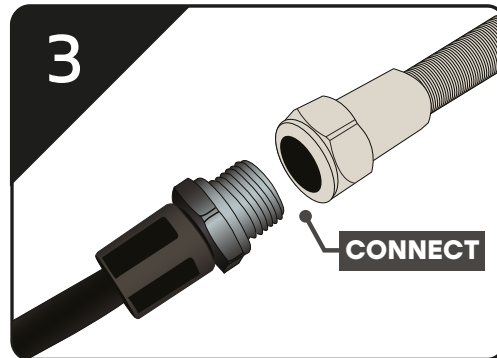
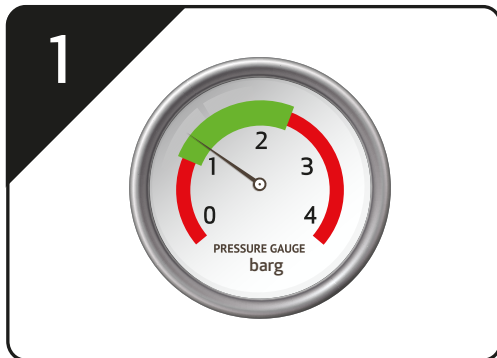


1. Switch off your boiler. It is important that no heating is on and no hot water is drawn during this process.
2. Find a towel radiator with a drain valve.
3. Slowly vent/bleed the towel radiator via the bleed pin to relieve system pressure.
4. Isolate the towel radiator by closing the inlet and outlet valves.
5. Once the towel radiator is isolated prepare a container under the drain valve and release the valve joint with a suitable spanner.
6. Remove an amount of system water equal to the volume of EndoTherm to be installed. If required, take a pre-install sample of water and place in a sealed, labelled container.
7. Tighten the valve joint when the required volume of system water is drained into the container.
8. Remove the plug from the top of the towel radiator.
9. Open the EndoTherm container and pour in the contents (some squeezing may be required) a funnel may also be used.
10. Once the EndoTherm container is emptied reinstall and tighten the towel radiator plug.
11. Re-open the towel radiator inlet and outlet valves that you closed in step 4.
12. Switch the boiler back on and gently bleed air from all radiators.
13. If required re-pressurise the heating system to the manufacturers recommended pressure (usually 1 bar, please consult manual if unsure).
14. Switch back on your boiler and EndoTherm will circulate within an hour.
15. If required take a post-install water sample to ensure EndoTherm has been installed at the correct concentration.

INSTALLATION METHOD 5 - INJECTION VIA MANUAL FILLING LOOP

This method requires the use of a suitable pump (manual or electrical) with hose fittings able to connect to the boiler water system. The most common fitting is ½” male BSP but others may be required.

The method shown utilises a pressurised hand pump with a maximum pump pressure of 3 Barg.

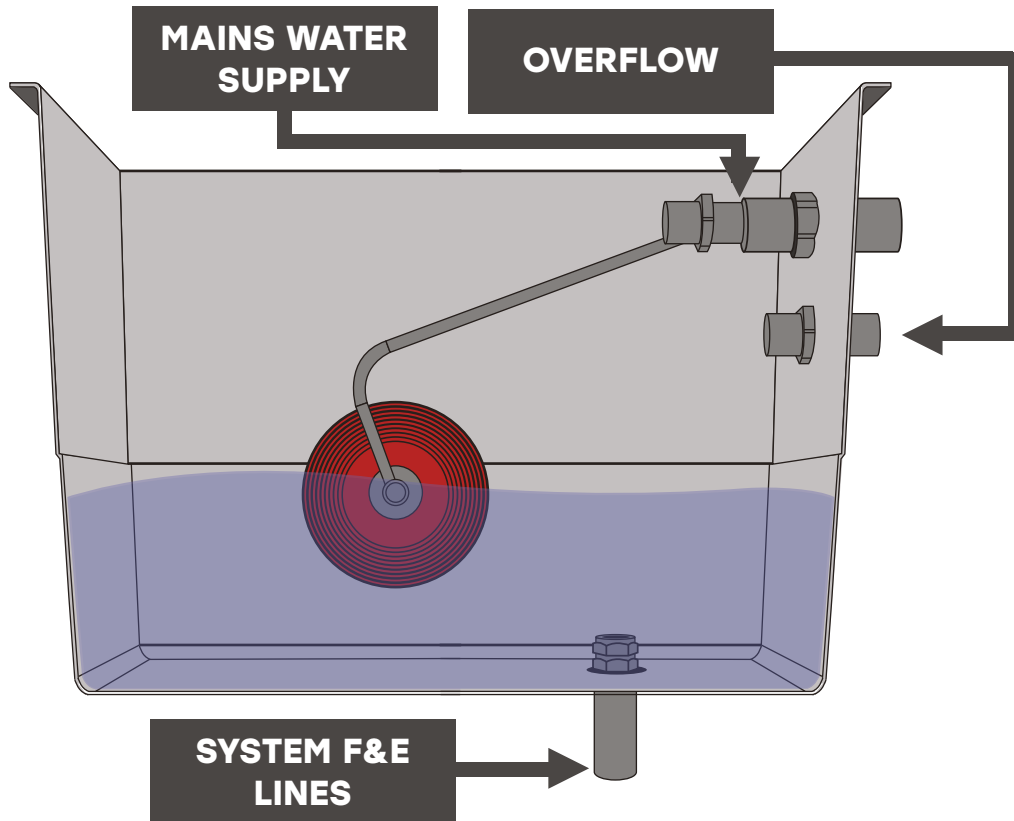


1. Check system pressure at local gauge. If system is at low pressure (<1 Barg) then product may be added, if system is at high pressure (>1 Barg) then a suitable volume must be removed via a drain point prior to adding product.
2. Confirm isolation valves at both ends of the filling loop hose are closed.
3. Disconnect filling loop hose from mains water feed end and connect to hand pump outlet hose (1/2” BSP fitting supplied).
4. Pour required amount of product into the hand pump vessel (if more product is required than pump capacity then repeated fill cycles will have to be undertaken).
5. Pressurise pump cylinder using hand pump.
6. Open manual valve on system side of filling loop hose.
7. Depress pump hose outlet valve and begin transfer of product into the system.
8. Monitor system pressure during transfer, if pressure increases to high levels cease transfer and drain water from system at suitable point.
9. Continue transfer until pump vessel is empty.
10. If more product is required, de-pressurise pump and refill with product. Repeat sequence from step 4.
11. Once all product has been transferred into the system, close manual valve on system side of filling loop hose.
12. De-pressurise pump via vessel bleed valve and disconnect pump hose from filling loop.
13. Reconnect filling loop hose to mains supply and briefly open filling loop to add water into the system and flush product through from filling line.
14. Confirm boiler system pressure is within manufacturers limits and top-up with water or drain as required.

INSTALLATION METHOD 6 - F&E TANK (OPEN VENTED SYSTEM)

Note - Installer must confirm there is a minimum 3.5% expansion volume available before tank overflows.

Simple F&E tank arrangement:



1. Isolate mains water supply into F&E tank.
2. At a suitable point on the heating system, open a valve and start to drain water from the system.
3. Monitor the level in the F&E tank, once it is nearly empty close the identified drain valve on the system.
4. Pour the product in to the F&E tank.
5. Open the identified system drain valve and continue to drain until all the product in the F&E tank has been admitted into the system.
6. Once the F&E tank is empty of product, close the identified system drain valve.
7. De-isolate the mains water supply to the tank and allow to fill to its normal operating level.

Note - For post installation sampling on this type of system it may take some time for the product to fully enter and mix in the system depending upon the size and capacity of the F&E lines connected to the tank. Sampling may have to be delayed for at least 24hrs in order to be representative.